

Having thus described the invention, what is claimed is:

- 1 1. In a utility vehicle having a frame supported by a steering axle having a pair of
2 steered wheels pivotally mounted thereon, a drive axle mounted to the frame and having a pair of
3 drive wheels mounted thereon, and a middle axle having a pair of support wheels mounted at
4 opposing ends thereof, the improvement comprising:
 - 5 a longitudinally extending bogey beam pivotally connected to said frame and
 - 6 having a forward end connected to said steering axle and a rearward end; and
 - 7 a middle axle support apparatus connected to said rearward end of said bogey
 - 8 beam and including:
 - 9 a transversely extending support beam pivotally connected to said
 - 10 rearward end of said bogey beam through a central support bracket, said support beam having
 - 11 opposing lateral ends supporting, respectively, said support wheels;
 - 12 a pair of support links pivotally connected respectively to laterally spaced
 - 13 mounting brackets on said support beam, said support links extending rearwardly from said
 - 14 support beam for pivotal connection to said frame; and
 - 15 a pivot member interconnecting said central support bracket and said
 - 16 bogey beam to define a longitudinally extending oscillation axis about which said support beam
 - 17 and said middle axis which is attached to said support beam oscillate to follow ground
 - 18 undulations.

1 2. The utility vehicle of Claim 1, wherein said pivot member is a ball joint providing
2 both said longitudinally extending oscillation axis and a transverse pivot axis for movement of
3 said support beam relative to said bogey beam.

1 3. The utility vehicle of Claim 2, further comprising a drive mechanism connected
2 with said middle axle to transfer rotational power directly thereto, said rear drive wheels being
3 rotatably driven from a drive transfer mechanism extending rearwardly from said middle axle.

1 4. The utility vehicle of Claim 3, wherein said drive mechanism is mounted on a
2 support module at least partially supported directly by said middle axle.

1 5. The utility vehicle of Claim 4, wherein said support links provide support for said
2 support module.

1 6. The utility vehicle of Claim 5, wherein said drive transfer mechanism is a pair of
2 laterally opposed flexible drives transferring rotational power directly to the respective rear drive
3 wheels.

1 7. The utility vehicle of Claim 6, wherein said flexible drives are chain drives.

1 8. A utility vehicle comprising:

2 a frame;

3 a rear drive axle mounted to the frame and having a pair of drive wheels rotatably

4 supported thereon;

5 a front steering axle having a pair of steered wheels pivotally mounted thereon;

6 a middle axle having a pair of support wheels mounted at opposing ends thereof;

7 and

8 a longitudinally extending bogey beam pivotally connected to the frame and

9 having a forward end and a rearward end, said steering axle being connected to said forward end

10 of said bogey beam and said middle axle being connected to said rearward end of said bogey

11 beam;

12 a support module mounted on said middle axle and extending rearwardly

13 therefrom for connection to a support link mounted to said frame, said support module having a

14 drive apparatus mounted thereon to provide operative driving power to said support wheels on

15 said middle axle; and

16 a drive mechanism interconnecting said support wheels on said middle axle with

17 said rear drive wheels to transfer rotational power thereto.

1 9. The utility vehicle of Claim 8, further comprising a transversely extending support

2 beam pivotally connected to said rearward end of said bogey beam through a central support

3 bracket, said support beam having opposing lateral ends supporting respectively said support
4 wheels of said middle axle.

1 10. The utility vehicle of Claim 9, wherein said central support bracket is pivotally
2 connected to said bogey beam by a pivot device that defines a longitudinally extending
3 oscillation axis about which said middle axle can oscillate to follow ground contours.

1 11. The utility vehicle of Claim 10, wherein said pivot device is a ball joint.

1 12. A utility vehicle comprising:
2 a frame;
3 a rear drive axle mounted to the frame and having a pair of drive wheels rotatably
4 supported thereon;
5 a front steering axle having a pair of steered wheels pivotally mounted thereon;
6 a middle axle having a pair of support wheels mounted at opposing ends thereof;
7 and
8 a longitudinally extending bogey beam pivotally connected to the frame and
9 having a forward end and a rearward end, said steering axle being connected to said forward end
10 of said bogey beam and said middle axle being connected to said rearward end of said bogey
11 beam via a transversely extending support beam pivotally connected to said rearward end of said

12 bogey beam by a pivot device that defines a longitudinally extending oscillation axis about which
13 said middle axle can oscillate to follow ground contours;

14 a support module mounted on said middle axle and extending rearwardly
15 therefrom for connection to a support link mounted to said frame, said support module having a
16 drive apparatus mounted thereon to provide operative driving power to said support wheels on
17 said middle axle; and

18 a drive mechanism interconnecting said support wheels on said middle axle with
19 said rear drive wheels to transfer rotational power thereto.

1 13. The utility vehicle of Claim 12, wherein said central support bracket defines a
2 transverse pivot axis that is eccentric with an axis corresponding to said middle axle, said
3 transversely extending support beam is positioned above said rearward end of said bogey beam.

1 14. The utility vehicle of Claim 13, wherein said pivot device is a ball joint defining
2 both said longitudinally extending oscillation axis and said transverse pivot axis to permit both
3 flotational and oscillatory movements for said middle axle relative to said frame.